COMPLIANCE INFORMATION

UL Listed
C-UL Listed (Canada)
CISPR/EN55022 Class A

FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

European Regulations

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Achtung !

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in weichen Fällen der Benutzer für entsprechende Gegenmaßnahmen werantwortlich ist.

Attention !

Ceci est un produit de Classe A. Dans un environment domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilsateur de prende les measures *spécifiques* appropriées

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TRANSITION
networks

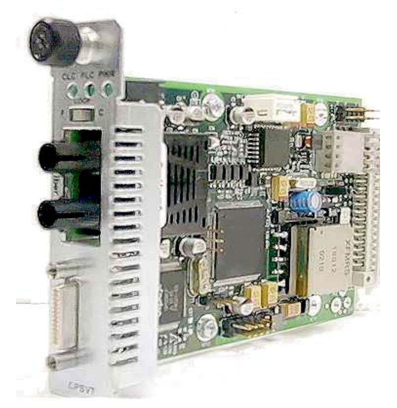
High-Speed Serial Copper-to-Fiber

Slide-in-Module Media Converters

CPSVT26xx-100

USER'S GUIDE

TRANSITION Networks CPSVT26xx-100 series high-speed serial copper-to-fiber media converters, designed to be installed in a TRANSITION Networks PointSystem™ media conversion center chassis, connect V.35, X.21, RS-449, RS-530, or RS-232 signals on copper cable, at speeds up to 10 Mb/s, through a universal 26-pin serial interface connector to fiber-optic cable. TRANSITION Networks also supplies cables for connecting network equipment to the CPSVT29xx-100 series media converters.



CPSVT2613-100	Copper high-speed serial 26-pin connector and SC connector to 1300 nM multimode fiber
CPSVT2611-100	Copper high-speed serial 26-pin connector and ST connector to 1300 nM multi-mode fiber
CPSVT2612-100	Copper high-speed serial 26-pin connector and ST connector to 1300 nM singlemode fiber
CPSVT2614-100	Copper high-speed serial 26-pin connector and SC connector 1300 nM singlemode fiber
CPSVT2629-100/ **CPSVT2629-101**	Set of two media converters to be installed together, each high-speed serial 26-pin connector and RX and TX single fiber connector to singlemode 20 km fiber-optic cable
CPSVT2629-102/ **CPSVT2629-103**	Set of two media converters to be installed together, each high-speed serial 26-pin connector and RX and TX single fiber connector to singlemode 40 km fiber-optic cable

NETWORKING THE CPSVT26xx-100

TRANSITION Networks CPSVT26xx-100 series slide-in-module high-speed serial copper-to-fiber media converters have the following features:

- Synchronous data rates up to 10 Mb/s
- Asynchronous data rates up to 128 Kb/s
- Interchangeable interface supporting RS-232, V.35, X.21, RS-449 and RS-530
- Local & remote loopback
- DCE/DTE support
- Support for control signals: RTS, CTS, DTR, DSR, DCD, LL and TM
- Multimode and singlemode fiber support (850/1300/1500nm) at distances up to 80km.
- Standalone versions.

NOTE: All interfaces are converted at the physical level, so the network administrator can “mix and match” signals, as: RS-449 to V.35, RS-530 to X.21, DTE to DTE, DTE to DCE, DCE to DCE.

TECHNICAL SPECIFICATIONS

Standards	V.35, RS-530, RS-449, RS-232, X.21	
Dimensions	2.9" x 4.8" x 1.4"	
Weight	9 oz (approximate)	
Power Source	12 VDC from PointSystem™ Conversion Center chassis	
Power Consumption	6 watts maximum	
Environment	Operating Temperature*:	0° to 50°C (32° to 122°F)
	Storage Temperature:	-20° to 85°C (-4° to 185°F)
	Humidity	10-90%, non condensing
	Altitude	0-10,000 feet
Warranty	Lifetime	

*Operating temperature range for the CPSVT26xx-100 series slide-In-module depends on the physical characteristics and the installation configuration of the Transition Networks chassis in which the slide-In-module is installed.

TRANSITION networks

DECLARATION OF CONFORMITY

Name of Mfg: **Transition Networks**
6475 City West Parkway, Minneapolis MN 55344 USA
Model: **CPSVT26xx-100 Series Media Converters**
Part Number(s): **CPSVT2611-100, CPSVT2612-100, CPSVT2613-100, CPSVT2614-100, CPSVT2629-100, CPSVT2629-101, CPSVT2629-102, CPSVT2629-103**
Regulation: **EMC Directive 89/336/EEC**

Purpose : To declare that the ***CPSVT26xx-100*** to which this declaration refers is in conformity with the following standards.

EN 55022: 1994 Class A; EN 55024:98; UL 1950, 3rd Edition

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Stephen Anderson
Stephen Anderson, Vice-President of Engineering

November 1, 2002
Date

CABLE SPECIFICATIONS

Fiber Cable

MULTIMODE

Fiber Optic Cable Recommended:	62.5 / 125 µm multimode fiber	
Optional:	100 / 140 µm multimode fiber	
	85 / 125 µm multimode fiber	
	50 / 125 µm multimode fiber	
CPSVT2613-100	1300 nM	
Fiber-optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber-optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Minimum Link Budget	11 dB	
Typical Maximum Cable Distance:	2 kilometers	
CPSVT2611-100	1300 nM	
Fiber-optic Transmitter Power:	min: -19.0 dBm	max: -14.0 dBm
Fiber-optic Receiver Sensitivity:	min: -30.0 dBm	max: -14.0 dBm
Minimum Link Budget	11 dB	
Typical Maximum Cable Distance:	2 kilometers	

SINGLEMODE

Fiber Optic Cable Recommended:	9 µm singlemode fiber	
CPSVT2612-100	1300 nM	
Fiber-optic Transmitter Power:	min: -15.0 dBm	max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -31.0 dBm	max: -8.0 dBm
Minimum Link Budget	16 dB	
Typical Maximum Cable Distance:	20 kilometers	
CPSVT2614-100	1300 nM	
Fiber-optic Transmitter Power:	min: -15.0 dBm	max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -31.0 dBm	max: -8.0 dBm
Minimum Link Budget	16 dB	
Typical Maximum Cable Distance:	20 kilometers	
CPSVT2629-100/	1310 nM TX/1550 nM RX	
CPSVT2629-101	1550 nM TX/1310 nM RX	
Fiber-optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Minimum Link Budget	9 dB	
Typical Maximum Cable Distance:	20 kilometers	
CPSVT2629-102/	1310 nM TX/1550 nM RX	
CPSVT2629-103	1550 nM TX/1310 nM RX	
Fiber-optic Transmitter Power:	min: -13.0 dBm	max: -6.0 dBm
Fiber-optic Receiver Sensitivity:	min: -32.0 dBm	max: -3.0 dBm
Minimum Link Budget	9 dB	
Typical Maximum Cable Distance:	40 kilometers	

INTERFACE STANDARDS AND CABLE OPTIONS SUPPORTED

Interface Cable Options			
Function	Connector Type	Length	TN P/N
V.35 DTE	34-pin Rectangular Male	3-Meter	35DTE-3
V.35 DCE	34-pin Rectangular Female	3-Meter	35DCE-3
X.21 DTE	15-pin D-sub Male	3-Meter	21DTE-3
X.21 DCE	15-pin D-sub Female	3-Meter	21DCE-3
RS-232 DTE	25-pin D-sub Male	3-Meter	232DTE-3
RS-232 DCE	25-pin D-sub Female	3-Meter	232DCE-3
RS-449 DTE	37-pin D-sub Male	3-Meter	449DTE-3
RS-449 DCE	37-pin D-sub Female	3-Meter	449DCE-3
RS-530 DTE	25-pin D-sub Male	3-Meter	530DTE-3
RS-530 DCE	25-pin D-sub Female	3-Meter	530DCE-3

RECOMMENDED MAXIMUM CABLE LENGTHS

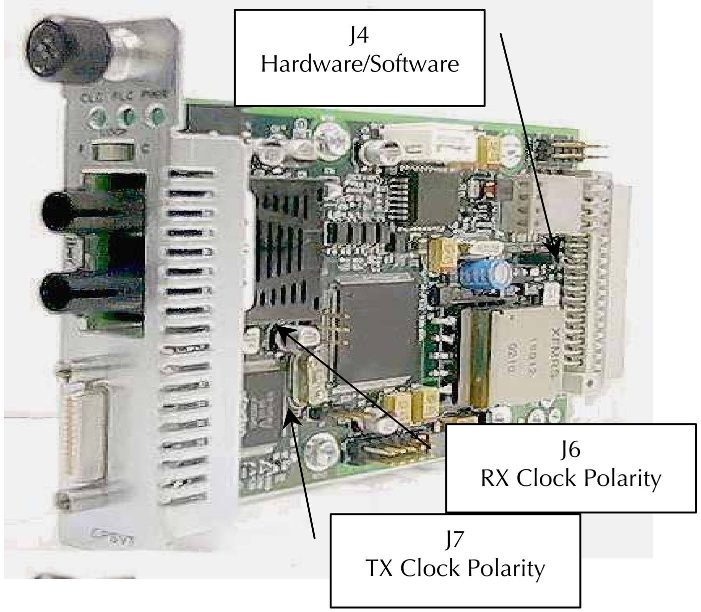
Recommended cable lengths for each interface at various data rates.			
Data Rate:	V.35/RS-449/RS-530	X.21	RS-232C
10 Mb/s	35 ft. / 10 m	N/A*	N/A*
6 Mb/sec	65 ft / 19 m	N/A*	N/A*
2 Mb/sec	150 ft. / 45 m	50 ft. / 15 m	N/A*
1 Mb/sec	300 ft. / 90 m	100 ft. / 30 m	N/A*
512 Kb/sec	600 ft. / 180 m	200 ft. / 60 m	N/A*
256 Kb/sec	1200 ft./ 365 m	400 ft. / 120 m	N/A*
128 Kb/sec	2400 ft. / 730m	800 ft. / 240 m	N/A*
56 Kb/sec	3000 ft. / 910 m	1600 ft. / 480 m	10 ft / 3 m
1.2 Kb/sec	3000 ft. / 910 m	3000 ft. / 910 m	50 ft / 15 m
*N/A - Not Applicable (rates not specified for the interface in question)			

INSTALLATION

CAUTION: Wear a grounding device and observe electrostatic discharge precautions when setting jumpers and/or switches on the exposed circuit board and when installing CPSVT29xx-100 series slide-in-module media converters in PointSystem™ Conversion Center. Failure to observe this caution could result in damage to, and subsequent failure of, the media converters.

Set Jumpers

Jumpers are located on media converter circuit board as shown:



Using small needle-nosed pliers or similar device, set jumpers according to site requirements

NOTE: Refer to pictures that follow for jumper locations. Refer to text that follows for functions enabled by jumper positions.

4. **Are the C(opper) L(ink) and F(iber) L(ink) LEDs flashing (indicating loopback mode)?**

   YES
   - Disable loopback function: In Hardware mode, set loopback switch to "N(ormal)" position.
     In Software mode, at SNMP interface, select disable loopback option.
   - Contact Technical Support: (800) 260-1312.

   NO
   - Proceed to step 5.

5. **Is Data Transfer Failing?**

   YES
   - Are clock input and output polarity correct?
   - Are correct TRANSITION Networks cables for data format installed? (If using other cables, contact Technical Support: (800) 260-1312 for specifications.)
   - Is mode on connected device correct mode (synchronous or asynchronous)?
   - Does loopback mode isolate fault?

   - Contact Technical Support: (800) 260-1312.

   NO
   - Contact Technical Support: (800) 260-1312.

FAULT ISOLATION & CORRECTION

If the media converter fails, isolate and correct the failure by determining the answers to the following questions and then taking the indicated action:

1. **Is the P(o)W(e)R LED on the media converter illuminated?**

   NO
   - Is the media converter inserted properly into the chassis?
   - Is the power cord properly installed in the chassis and at the external power source?
   - Does the external power source provide power?
   - If using SNMP management, has media converter been powered OFF at software interface?
   - Contact Technical Support: (800) 260-1312.

   YES
   - Proceed to step 2.

2. **Is the C(opper) L(ink) LED illuminated?**

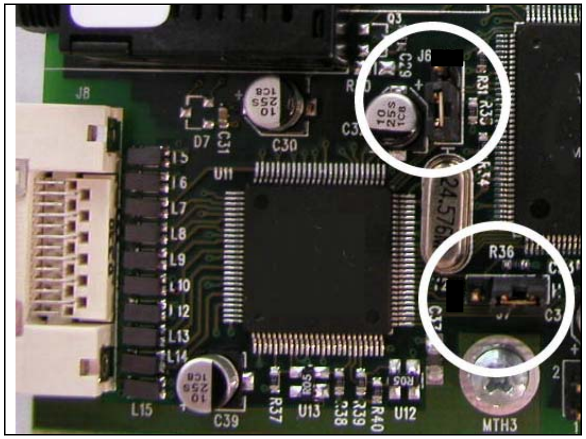
   NO
   - Are copper cables connected properly.
   - Is device attached to media converter by copper cable working properly.
   - Is data present on the cable?
   - Contact Technical Support: (800) 260-1312.

   YES
   - Proceed to step 3.

3. **Is the F(iber) L(ink) LED illuminated?**

   NO
   - Are fiber cables connected properly.
   - Are TX and RX cables on media converter connected to RX and TX ports, respectively, on other media converter.
   - Is data present on the cable?
   - Are both media converters in the same mode (synchronous or asynchronous)?
   - Contact Technical Support: (800) 260-1312.

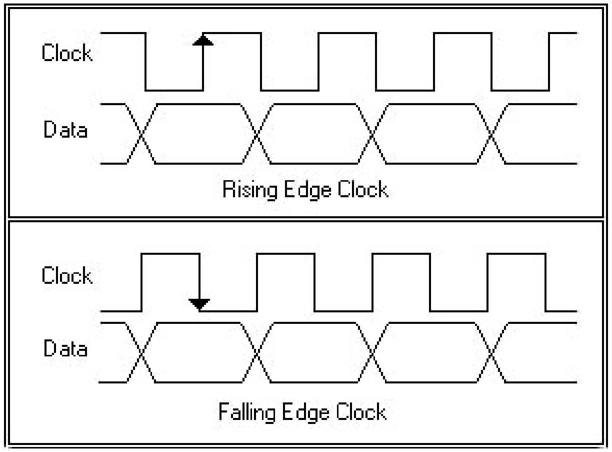
Set RX and TX Clock Polarity Jumpers



J6 – RX Clock Polarity Selects the polarity of the receive clock. When in A position, receive data (RxD) is sampled on rising edge of Receive clock (RxC). When in B position, receive data (RxD) is sampled on falling edge of Receive clock (RxC).

J7 - TX Clock Polarity Selects the polarity of the transmit clock. When in A position, Transmit Data (TxD) is sampled on rising edge of Transmit clock (TxC). When in B position, transmit data (TxD) is sampled on falling edge of Transmit Clock (TxC).

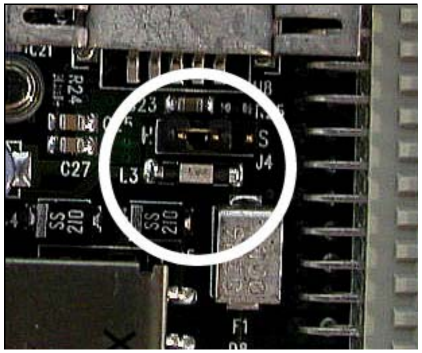
EDGE OPTIONS SELECTED BY JUMPERS



Set Hardware/Software Jumper

NOTE: Jumper is located on media converter slide-in-module circuit board. The default factory setting is **H** (hardware).

Use small needle-nosed pliers or similar device to set jumper.



J4 - **Hardware/Software** Defines control of *terminal timing* and the *loopback function*.

In the **H** (hardware) position, the Terminal Timing Switch *controls terminal timing* and the Loopback Switch (located on the CPSVT29xx-100 front panel) controls the *loopback function*.

In the **S** (software) position, the SNMP management agent controls both *terminal timing* and the *loopback function*, disabling the switches, ***except when the Terminal Timing switch is set to Position F (asynchronous mode).***

NOTE: Setting the Terminal Timing switch to Position **F** overrides the **S** (software) mode setting and selects Asynchronous mode.

OPERATION

Using Status LEDs

Use the status LEDs to monitor media converter operation in the network.

C(opper) **L**(ink) - Steady LED indicates copper link is up; flashing LED indicates copper link is in loop-back mode. NOTE: In asynchronous mode, the **C**(opper) **L**(ink) LED may flash if data rates drop below 300 cycles per second.

F(iber) **L**(ink) - Steady LED indicates fiber link is up; flashing LED indicates fiber link is in loop-back mode.

P(o)**W**(e)**R** - Steady green LED indicates connection to external AC power.

*Using SNMP**

Use SNMP at an attached terminal or at a remote location to:

- Monitor media converter by monitoring:

  Media Converter Power
  Fiber Link Status (local only)
  Loopback Status (local and/or remote)
  Copper Speed Selected (local and/or remote)
  Hardware Switch settings (local and/or remote)
  Cable type (local and/or remote)
  Clock polarity setting (local and/or remote)

- Enter network commands that:

  Bootload Firmware (local only)
  Enable/disable Loopback on Copper and Fiber (local and/or remote)
  Select Speed on Copper (local and/or remote)
  Power Down Media Converter.

*See the on-line documentation that comes with TRANSITION Networks FocalPoint™ software for applicable commands and usage.

Install Cable

COPPER

1. Locate or build cables that are compliant with specifications in this document.
2. Connect 26-pin connector at one end of cable to media converter 26-pin copper connector.

   CAUTION: Ensure that cable screwlocks are tightened securely. Failure to observe this caution could cause data transfer to fail.
3. Connect RJ-45 plug connector at other end of cable to network equipment.

FIBER

1. Locate or build fiber cables that are compliant with specifications in this document, with male two-stranded TX to RX connectors installed at both ends.
2. Connect cable with connector installed at TX location on media converter to RX location on attached device.
3. Connect cable with connector installed at RX location on media converter to TX location on attached device.

Power the CPSVT29xx Series Media Converter

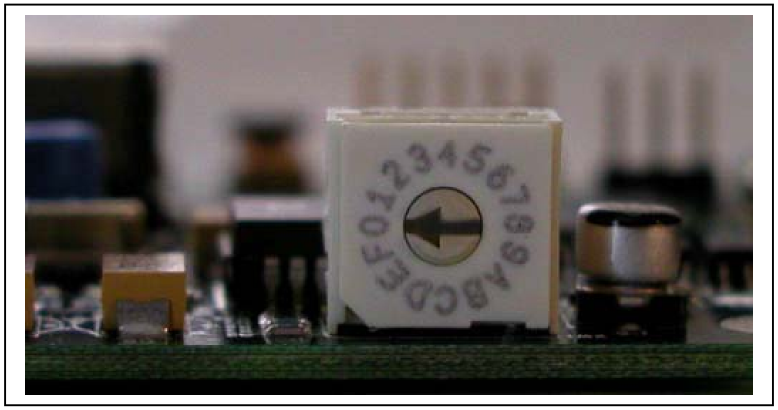
CPSVT29xx-100 series slide-In-module media converters are powered through the PointSystem™ Conversion Center.

Set Terminal Timing Switch

NOTE: The sixteen-position Terminal Timing switch, located on the CPSVT29xx-100 slide-in-module media converter circuit-board, allows the network administrator to configure the media converter for network conditions.

Insert small flatblade screwdriver or similar device into recessed arrow on Terminal Timing switch, then gently rotate switch to the position required for the site installation.

Refer to table below for switch position key.



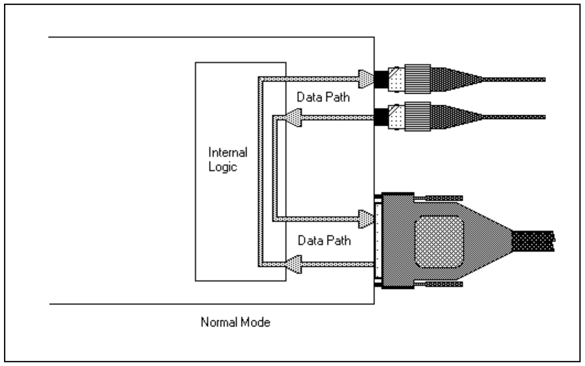
0 – TT = Receive CLK
1 – 56 Kb/s
2 – 64 Kb/s
3 – 112 Kb/s
4 – 128 Kb/s
5 – 256 Kb/s
6 – 384 Kb/s
7 – 512 Kb/s
8 – 768 Kb/s
9 – 1024 Kb/s
A – 1544 Kb/s
B – 2048 Kb/s
C – 3072 Kb/s
D – 4096 Kb/s
E – 6144 Kb/s
F - Asynchronous mode

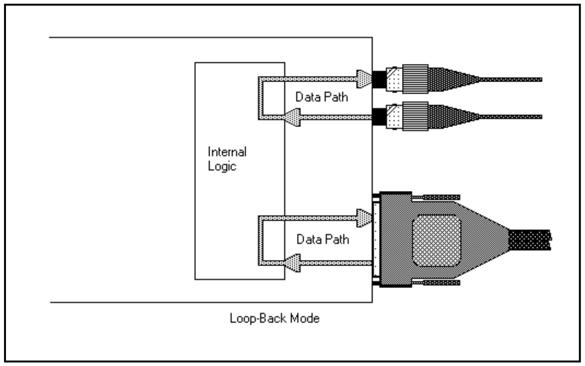
Terminal Timing Switch Settings

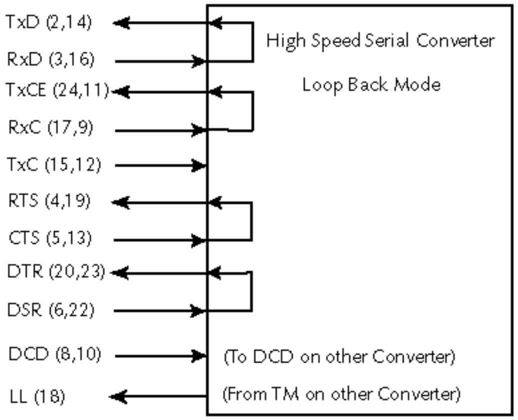
Set Loopback Switch

NOTE: The Loopback switch is located on the CPSVT29xx-100 slide-in-module media converter front, below the LED indicators.

Set the Loopback switch to the **N**(ormal) position.







Install CPSVT29xx in PointSystem™ Chassis

CAUTION: Any PointSystem™ media conversion center installation slot in which a media converter slide-in-module is NOT installed must have a protective plate instead. Failure to observe this caution will void Class A and/or Class B compliance.

NOTE: Install media converter slide-in-modules in any slot, in any order.

1. Carefully slide media converter slide-in-module into installation slot, aligning media converter slide-in-module with installation guides.

   NOTE: Ensure that slide-in-modules is firmly seated against backplane.

2. Secure slide-in-modules by securing panel fastener screw (attached to slide-in-modules) to chassis front.
3. Install protective plate at every slide-in-module installation slot in which a media converter slide-in-module is not installed. Secure attached protective plate panel fastener screw to chassis front.